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REMARKS

Claims 1, 3-4, 6-10, and 12-40 are currently pending in this application. By virtue of this amendment, claims 1, 3, 6, 12-14, 18-20, 22, 28, and 37 have been amended. New claims 38-40 have been added. Support for new claim 38 can be found in the specification, for example at page 5, lines 9-15. Support for new claims 39 and 40 can be found in the specification, for example at page 4, lines 18-24. No new matter is believed to have been added by virtue of this amendment.

Period for Reply

Applicants note that the shortened statutory period for reply is set to expire 2 months from the mailing date of the Office action. As set forth in the MPEP §710.02(b), Applicants believe that the correct shortened statutory period for reply should be 3 months, and respectfully request confirmation of the correct shortened statutory period for reply.

Interview Summary

Applicants appreciate the courtesy extended by the Examiner in discussing the present applicant in a phone interview on July 6, 2005.

Rejections Under 35 U.S.C. 112, Second Paragraph

Claims 12, 24-27 and 33 stand rejected under 35 U.S.C. 112, second paragraph as being indefinite.

The Examiner asserts that claims 12, 24-27, and 33 disclose that the amplitude of the beam is modified by acoustic modulation. The Examiner states that Applicant should explicitly specify what would be the "significance" of modulation of an electromagnetic wave by an acoustic wave. "Does Applicant calculate the noise?"

As discussed previously, Applicants believe that this concept is fully described in the specification in such a way that a person skilled in the art would readily be able to

ascertain how the amplitude of a beam is modified by acoustic modulation. However, to further the Examiner's understanding of this concept, Applicants have attached hereto as Exhibit A an explanation of an acousto-optic modulator.

All of the listed modulation techniques are well known in the art. Applicants claims set forth the features that the intensity of the pixels in the buffer region is modified by modulating the amplitude of a beam of electromagnetic radiation (which in a preferred embodiment is a laser beam) and then further define the step of modulating the beam using various well known modulation techniques. Applicants respectfully submit that these claims are not indefinite and that a person skilled in the art would be familiar with these modulation techniques and how they are used to modulate a beam of electromagnetic radiation as set forth in the claimed invention.

Reconsideration and withdrawal of the rejection of claims 12 and 24-27 being indefinite under 35 U.S.C. §112, second paragraph is respectfully requested.

Claims 1-18 stand rejected under 35 U.S.C. §112, first paragraph as failing to comply with the enablement requirement because the term "moving" is not explicitly set forth in the specification. The Examiner suggested replacing "moving" with "indexing" in order to overcome this rejection, which Applicants have done. Reconsideration and withdrawal of the rejection of claims 1-18 as failing to comply with the enablement requirement is respectfully requested.

Rejections Under 35 U.S.C. 103

Claims 1-37 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Takiguchi et al. in view of Komiya et al.

With respect to claims 1, 19, 22, and 28, the Examiner asserts that Takiguchi's invention relates to an image synthesization method for synthesizing a plurality of

images, in which the image areas partially overlap each other in order to create a single synthetic image, but does not explicitly specify the unique stitching method of the invention of creating a first buffer region in which the intensity of the pixels in attenuated and a second buffer region in which the intensity of the pixels is attenuated and then overlapping the buffer regions.

The Examiner uses Komiya to cure the deficiencies of Takiguchi and asserts that Komiya describes an image processing apparatus forming combining images into a wide high-resolution image of the object. The Examiner asserts that it would be obvious to combine the teaching of Takiguchi and Komiya to achieve Applicant's claimed invention.

As stated previously, Applicants respectfully disagrees that the combination of Takiguchi with Komiya describes all of the elements of the claimed invention.

Applicants have amended the claims to more clearly define the invention over the prior art.

The language "photosensitive coated substrate" has been changed to "***photosensitive surface***" as set forth in the specification at page 4, lines 31-33. A ***photosensitive*** material is as a material that changes when exposed to light.

Applicants have carefully reviewed Takiguchi and Komiya and find no teaching or description in either reference that the "image" is being "printed" onto a photosensitive surface, as specifically required by the claimed invention. The Examiner references the Abstract in Takiguchi for this teaching. However, Applicants do not find this teaching in Takiguchi. While Applicants acknowledge that the image of Takiguchi may be printed, it is not printed onto a photosensitive surface. Examiner points to the teaching in Applicant's disclosure, but does not pointed to any description in either reference that demonstrates that the image is printed on a photosensitive surface.

As stated previously, Takiguchi is concerned with an image synthesization method, in particular a panoramic image synthesization method when using an electronic camera. Komiya is also directed to processing images from electronic cameras, and does not teach or suggest that the method would be applicable to overlapping images on a photosensitive coated substrate.

Claim 1 has been amended to more clearly define the process of the invention. In particular, claim 1 has been amended to include the following steps:

> 1) establishing a first region on the photosensitive surface in which a first image segment will be printed, wherein the first image segment includes a buffer region comprising a plurality of pixels that overlap both the first image segment and an adjacent second image segment;
> 2) printing, with a printing device, the first image segment onto the first region of the photosensitive surface, including the buffer region, while modifying the intensity of the pixels printed in the buffer region by a first ramp value;
> 3) establishing a second region on the photosensitive surface in which the second image segment will be printed adjacent to the first image segment;
> 4) indexing at least one of the printing device and the photosensitive surface relative to one another to print the second image segment on the photosensitive surface;
> 5) printing, with the printing device, the second image segment, including the buffer region onto the second area of the photosensitive surface, while modifying the intensity of the pixels printed in the buffer region by a second ramp value;
> whereby the first image segment and the second image segment substantially overlap in the buffer region to form the larger composite image on the photosensitive surface.

Applicants respectfully submit that these amendments address the Examiner's concerns for clarity and serve to clearly define the invention over the prior art. The Examiner suggested rearranging the order of claim 1 as set forth on page 2 of the Office action. Applicants have studied the Examiner's suggestions and believe that the above amendments address the Examiner's concerns and more clearly describe the invention.

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In particular, Applicants have combined the step of printing the first image segment onto the first region of the photosensitive surface, including the buffer region, ***while modifying the intensity of the pixels printed in the buffer region*** by a first ramp value. Likewise the step of printing the second image segment has been similarly amended. Applicants respectfully submit that amended claim 1 is neither described nor suggested by the prior art.

One of the most critical differences between the claimed invention and the cited references is that Applicants are modifying the image in the buffer region as it is being **printed** onto the substrate. In contrast, while Takiguchi and Komiya are modifying an image **before** the image is printed (assuming that the image is printed onto the substrate). This is a significant difference.

The Examiner asserts that Applicant should explicitly specify the boundaries (sizes) of the first image segment and the first area of the photosensitive surface. Applicants respectfully disagree. As stated previously, the boundaries of the first image segment and the first area of the photosensitive surface are dictated by the scanning device used to print the image on the substrate. Applicants respectfully submit that it would be well within the purview of one skilled in the art to determine an appropriate size of the image segment depending on the size of the composite image, the size of the photosensitive surface, the size of the printing device, etc. Furthermore, absent the Examiner finding any teaching or suggestion in the prior art that would anticipate or render obvious this feature, Applicants do not believe that it is necessary to specify the boundaries of the first image segment and the first area of the photosensitive surface.

As to claims 3 and 20, the Examiner asserts that that the Komiya teaches that the first ramp value and the second ramp value are opposite one another. However, Komiya does not print the pixels in the buffer region while modifying the intensity of the pixels, as specifically recited in the claimed invention.

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As to claims 4 and 21, as stated previously, Komiya does not indicate the number of pixels in the context of **printing an image segment onto a photosensitive surface** as claimed by Applicant.

As to claims 6-10, the Examiner asserts that the step is obvious because of the conversion between the intensity and amplitude of a beam. However, as stated previously, neither Takiguchi nor Komiya teach or fairly suggest modulating the intensity of the pixels in the buffer region, thus it cannot follow that these claims would be obvious in view of either of the cited references. The Examiner has not addressed this argument other than to request that Applicants specify any other option besides using an amplitude of a signal to modify the pixels in the buffer. However, absent the Examiner finding any teaching or suggestion in the prior art that would anticipate or render obvious these claims, Applicants do not believe that it is necessary to specify any other options.

As to claims 12, 24-27, and 33, the Examiner asserts that Komiya describes fixed Pattern Noises. Fixed pattern noises (FPN) are defined as the unwanted fluctuation of the signal of one pixel over time. Thus FPN are very different from AOM in which the AOM controls the intensity of the laser beam by diffracting a percentage of the laser beam, and would not anticipate or render obvious the referenced claims.

As to claim 13, the Examiner asserts that Takiguchi illustrates the step of scanning a photosensitive coated substrate by a rotating polygon, rotating single facet mirror or rotating holographic scanner illuminated by the exposing radiation source. Applicant respectfully disagrees. Applicants have amended claim 13 to clearly state that the printing device is a scanner, which is not described or suggested by Takiguchi. Takiguchi only disclose inkjet or laser printers and do not describe or suggest the specific scanners claimed by Applicants.

As to claims 14-18, the Examiner asserts that Takiguchi's abstract describes that printing of the first and second image segments is achieved through having a

photosensitive coated substrate exposed by a fixed pattern array of individually segmented light sources. As stated previously, Applicants have reviewed the abstract of Takiguchi and can find no teaching or suggestion as asserted by the Examiner. The abstract of Takiguchi does not describe exposing a substrate by a fixed pattern array of individually segmented light sources. This is especially true, because as discussed in detail above, Takiguchi does not teach or fairly suggest a photosensitive surface.

As to claim 29, neither of the references teaches or suggests that the ramp rate is defined as the percentage of modulation per in-scan pixel. As stated previously, Takiguchi only discloses performing a check, i.e., a comparison of the data, while Komiya describes increasing the number of pixels, **not** the modulation of the individual pixels. The Examiner also asserts that it is obvious to interpret ¶[0152] of Komiya to render obvious this limitation. However, Applicants respectfully submit that this teaching is distinguishable from the Applicants' claimed invention.

As to claim 30, as stated previously, while Komiya may describe an integrator, Komiya does not teach or fairly suggest computing the intensity value. Komiya is concerned with calculating a location of the pixels, **not** with calculating the intensity of the pixels, which is what is required by Applicant's claimed invention. Furthermore, while Komiya may modify the color of a pixel as pointed out by the Examiner, Komiya does not compute the intensity value in the buffer region as described and claimed by Applicants.

As to claim 31, the Examiner asserts that Komiya teaches that the intensity value and the digital pixel data are converted into analog data by a multiplier. As discussed above, even though Komiya may convert digital data to analog data, there is still no teaching that Komiya computes the intensity value in the buffer region as described and claimed by Applicants

As to claims 32-33, the examiner asserts that Komiya describes a means for modulating intensity that is amplitude modulation. As to claims 34, the Examiner asserts that it is obvious because it is a technique to transmit information using a sine wave carrier. As to claim 35, the Examiner asserts that it is obvious because it is a form of modulation in which the frequency of the modulated carrier wave is varied in proportion to the amplitude of the modulating wave. As stated previously, while Applicant does not dispute that Komiya describes a modulator, there is no teaching or suggestion in Komiya that the type of modulator being used is one of the particular modulators described and claimed by Applicants.

The Examiner further asserts that these are all well-known modulation techniques. While Applicants do not dispute that these may be known modulation techniques, the Examiner has not provided any reference in support of this assertion nor has the Examiner explained how Komiya (or Takiguchi) describe or suggest any of these "well-known" modulation techniques.

As to claim 37, as discussed in detail above, neither Takiguchi nor Komiya describe or suggest a photosensitive surface. Therefore, as stated previously, neither Takiguchi nor Komiya describe or suggest a photosensitive surface that is a printing plate or drum.

New claims 38-40 are also not described or suggested by the prior art. In particular, the prior art does not describe or suggest a printing device that is a raster output scanner. Takiguchi disclose that the printer is a binary value printer such as an ink jet printer or a laser beam printer, but does not suggest the use of a raster output scanner. In addition, Komiya only discloses the use of a *printer* ¶[0328], and there is no suggestion as to the particular type of printer that is usable in the invention.

For all of these reasons, it is believed that 1, 3-4, 6-10, and 12-40 are patentable over the teaching of Takiguchi and Komiya. Reconsideration and withdrawal of the

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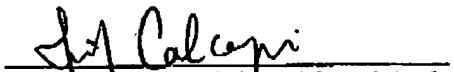
rejection of claims 1, 3-4, 6-10, and 12-38 as being unpatentable over Takiguchi in view of Komiya is respectfully requested.

Conclusion

For all of the foregoing reasons, it is believed that all of claims 1, 3-4, 6-10, and 12-40 are now in condition for allowance. Such action is earnestly sought. If the Examiner perceives of any reason why such action should not be taken he is requested to contact the undersigned for a telephone interview prior to issuance of the next office action.

Respectfully Submitted,



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